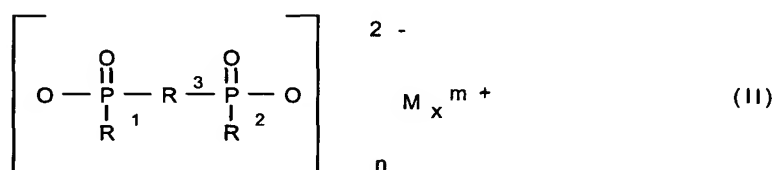
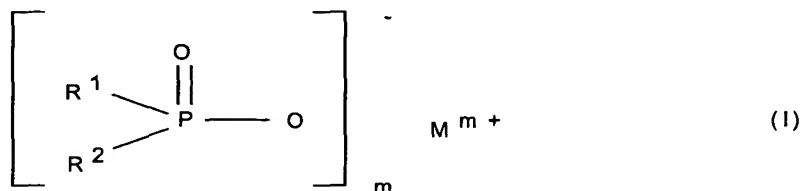


Patent Claims

1. A surface-modified phosphinic salt of the formula (I) and/or a surface-modified diphosphinic salt of the formula (II) and/or polymers of these,



where

R^1 and R^2 are identical or different and are C_1 - C_6 -alkyl, linear or branched, and/or aryl;

R^3 is C_1 - C_{10} -alkylene, linear or branched, C_6 - C_{10} -arylene, -alkylarylene, or -arylalkylene;

M is Mg, Ca, Al, Sb, Sn, Ge, Ti, Zn, Fe, Zr, Ce, Bi, Sr, Mn, Li, Na, K, and/or a protonated nitrogen base;

m is from 1 to 4;

n is from 1 to 4;

x is from 1 to 4,

wherein the phosphinic salt and/or diphosphinic salt, or their polymers, have been encapsulated with a surface layer composed of a synthetic resin or a wax.

2. The compound as claimed in claim 1, wherein R^1 and R^2 are identical or different and are C_1 - C_6 -alkyl, linear or branched, and/or phenyl.

3. The compound as claimed in claim 1 or 2, wherein R^1 and R^2 are identical or different and are methyl, ethyl, n-propyl, isopropyl, n-butyl, tert-butyl, n-pentyl and/or phenyl.
4. The compound as claimed in one or more of claims 1 to 3, wherein R^3 is methylene, ethylene, n-propylene, isopropylene, n-butylene, tert-butylene, n-pentylene, n-octylene or n-dodecylene.
5. The compound as claimed in one or more of claims 1 to 3, wherein R^3 is phenylene or naphthylene.
6. The compound as claimed in one or more of claims 1 to 3, wherein R^3 is methylphenylene, ethylphenylene, tert-butylphenylene, methylnaphthylene, ethylnaphthylene, or tert-butyl naphthylene.
7. The compound as claimed in one or more of claims 1 to 3, wherein R^3 is phenylmethylene, phenylethylene, phenylpropylene, or phenylbutylene.
8. The compound as claimed in one or more of claims 1 to 7, wherein M is calcium, aluminum, or zinc.
9. The compound as claimed in one or more of claims 1 to 8, wherein the synthetic resin comprises a curable resin.
10. The compound as claimed in claim 9, wherein the curable resin comprises an epoxy resin, a phenolic resin, or a melamine resin.
11. The compound as claimed in claim 9, wherein the amounts added of the synthetic resin are from 0.1 to 20% by weight, based on the phosphinic salt.

12. The compound as claimed in claim 9, wherein the amounts added of the synthetic resin are from 0.5 to 10% by weight, preferably from 1 to 5% by weight, based on the phosphinic salt.
13. The compound as claimed in one or more of claims 1 to 8, wherein the waxes comprise hydrocarbon waxes, ester waxes, oxidized polyolefin waxes, oxidized hydrocarbon waxes, amide waxes, wax acids, wax soaps and/or a combination of these components.
14. The compound as claimed in one or more of claims 1 to 8, wherein the waxes are used in the form of powder, micropowder, dispersion in water, dispersion in solvent, or in the form of dispersions in water/solvent mixtures.
15. The compound as claimed in one or more of claims 1 to 8, wherein the amounts added of the waxes are from 0.5 to 10% by weight, preferably from 1 to 5% by weight, based on the phosphinic salt.
16. The compound as claimed in one or more of claims 1 to 15, wherein amounts of from 0.1 to 5% by weight, preferably from 0.1 to 1% by weight, based on the phosphinic salt, of a water-emulsifiable organic liquid acting as phlegmatizer are added.
17. The compound as claimed in one or more of claims 1 to 16, wherein the water-emulsifiable organic liquid comprises polyglycols, phthalates, or aromatic phosphoric esters.
18. The compound as claimed in one or more of claims 1 to 17, wherein melamine phosphate, dimelamine phosphate, melamine pyrophosphate, melamine polyphosphates, melam polyphosphates, melon polyphosphates and/or melon polyphosphates are also present.

19. The compound as claimed in one or more claims 1 to 18, wherein melamine condensation products, such as melam, melem, and/or melon, are also present.

20. The compound as claimed in one or more of claims 1 to 19, wherein oligomeric esters of tris(hydroxyethyl) isocyanurate with aromatic polycarboxylic acids, benzoguanamine, tris(hydroxyethyl) isocyanurate, allantoin, glycoluril, melamine, melamine cyanurate, dicyandiamide, and/or guanidine are also present.

21. The compound as claimed in one or more of claims 1 to 20, wherein nitrogen-containing phosphates of the formulae $(\text{NH}_4)_y\text{H}_{3-y}\text{PO}_4$ and, respectively, $(\text{NH}_4\text{PO}_3)_z$, are present, where y is from 1 to 3 and z is from 1 to 10 000.

22. The compound as claimed in one or more of claims 1 to 21, wherein a synthetic inorganic compound and/or a mineral product is present.

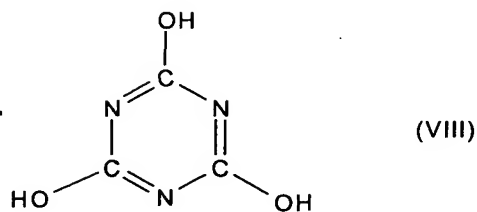
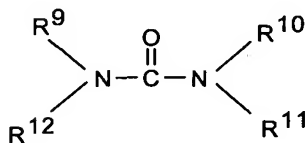
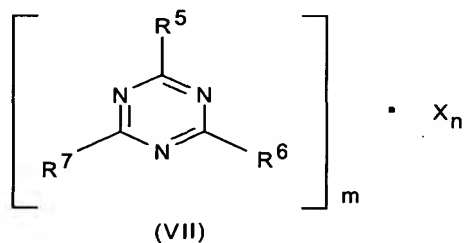
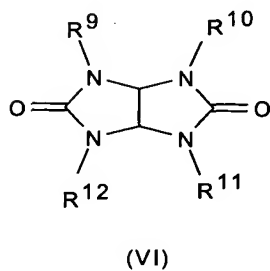
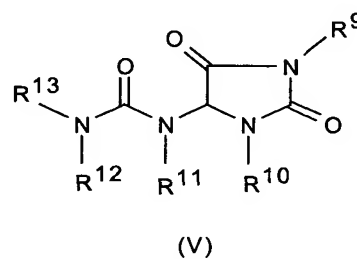
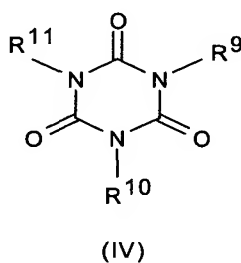
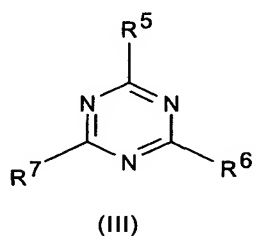
23. The compound as claimed in one or more of claims 1 to 22, wherein the synthetic inorganic compound and/or the mineral product m comprises an oxygen compound of silicon, magnesium compounds, metal carbonates of metals of the second main group of the periodic table, red phosphorus, or comprises zinc compounds or aluminum compounds.

24. The compound as claimed in one or more of claims 1 to 23, wherein the oxygen compounds of silicon comprise salts and esters of orthosilicic acid and condensation products thereof, or comprise silicates, zeolites, and silicas, or comprise glass powder, glass/ceramic powder, or ceramic powder; the magnesium compounds comprise magnesium hydroxide, hydrotalcites, magnesium carbonates or magnesium calcium carbonates; the zinc compounds comprise zinc oxide, zinc stannate, zinc hydroxystannate, zinc

phosphate, zinc borate, or zinc sulfides; the aluminum compounds comprise aluminum hydroxide or aluminum phosphate.

25. The compound as claimed in one or more of claims 1 to 24, wherein nitrogen compounds are present as a further component.

26. The compound as claimed in one or more of claims 1 to 25, wherein the nitrogen compounds comprise those of the formulae (III) to (VIII) or mixtures thereof



where

R^5 to R^7 are hydrogen, C_1 - C_8 -alkyl, or C_5 - C_{16} -cycloalkyl or -alkylcycloalkyl, unsubstituted or substituted with a hydroxy function or with a C_1 - C_4 -hydroxyalkyl function, or are C_2 - C_8 -alkenyl, C_1 - C_8 -alkoxy, -acyl, or -acyloxy, or C_6 - C_{12} -aryl or -arylalkyl, or $-OR^8$ or $-N(R^8)R^9$, or else N-alicyclic systems or N-aromatic systems,

R^8 is hydrogen, C_1 - C_8 -alkyl, C_5 - C_{16} -cycloalkyl or -alkylcycloalkyl, unsubstituted or substituted with a hydroxy function or with a C_1 - C_4 -hydroxyalkyl function, or is C_2 - C_8 -alkenyl, C_1 - C_8 -alkoxy, -acyl, or -acyloxy, or C_6 - C_{12} -aryl or -arylalkyl,

R^9 to R^{13} are the groups of R^8 , or else $-OR^8$,

m and n, independently of one another, are 1, 2, 3, or 4,

X is acids which can form adducts with triazine compounds (III).

27. The compound as claimed in one or more of claims 1 to 26, wherein carbodiimides are also present.

28. A process for preparing compounds as claimed in one or more of claims 1 to 27, which comprises adjusting the pH of an aqueous suspension of a phosphinate to 4-9, then adding an aqueous emulsion of a wax or of a synthetic resin, or a solution of the wax or synthetic resin in a water-miscible solvent, stirring for from 0.5 to 3 hours at a temperature of from 40 to 80°C, and then, where appropriate, adding an aqueous emulsion of an organic liquid, and stirring for from 0.5 to 3 hours at a temperature of from 20 to 90°C, in such a way that from 0.1-20% of wax and, respectively, synthetic resin and, where appropriate, from 0.1 to 5% of phlegmatizer are applied to 80-99.9 parts by weight of phosphinate.

29. A flame-retardant plastics molding composition comprising a compound as claimed in one or more of claims 1 to 27.

30. The flame-retardant plastics molding composition as claimed in claim 29, wherein the thermoplastic polymers comprise HI (high-impact) polystyrene, polyphenylene ethers, polyamides, polyesters, polycarbonates, or blends or polyblends of the type represented by ABS (acrylonitrile-butadiene-styrene), or PC/ABS (polycarbonate/acrylonitrile-butadiene).

31. The flame-retardant plastics molding composition as claimed in claim 29 or 30, wherein the polymer comprises polyamide and/or polyester.

32. The flame-retardant plastics molding composition as claimed in one or more of claims 29 to 31, wherein, independently of one another, the surface-modified phosphinic salt is used at a concentration of from 1 to 30% by weight, and the nitrogen compound is used at a concentration of from 0.1 to 10% by weight, based in each case on the plastics molding composition.

33. A thermoplastic polymer molding, a thermoplastic polymer film, a thermoplastic polymer filament, or a thermoplastic polymer fiber, comprising a compound as claimed in one or more of claims 1 to 27.

34. A polymer molding, a polymer film, a polymer filament, or a polymer fiber, as claimed in claim 33, wherein the thermoplastic polymer comprises HI (high-impact) polystyrene, polyphenylene ethers, polyamides, polyesters, polycarbonates, or blends or polyblends of the type represented by ABS (acrylonitrile-butadiene-styrene), or PC/ABS (polycarbonate/acrylonitrile-butadiene-styrene), polyamide, polyester, and/or ABS.

35. The polymer molding, polymer film, polymer filament, or polymer fiber as claimed in claim 33 or 34, which comprises
from 1 to 30% by weight of a compound of claims 1 to 27
from 1 to 99% by weight of thermoplastic polymer, or a mixture of these
from 0 to 5% by weight of additives

from 0 to 50% by weight of filler.

36. The polymer molding, polymer film, polymer filament, or polymer fiber as claimed in one or more of claims 33 to 35, which comprises
from 5 to 20% by weight of a compound of claims 1 to 27
from 48 to 95% by weight of polymer, or a mixture of these
from 0 to 2% by weight of additives
from 0 to 30% by weight of filler.